

Sample Encapsulation Device, Phase I

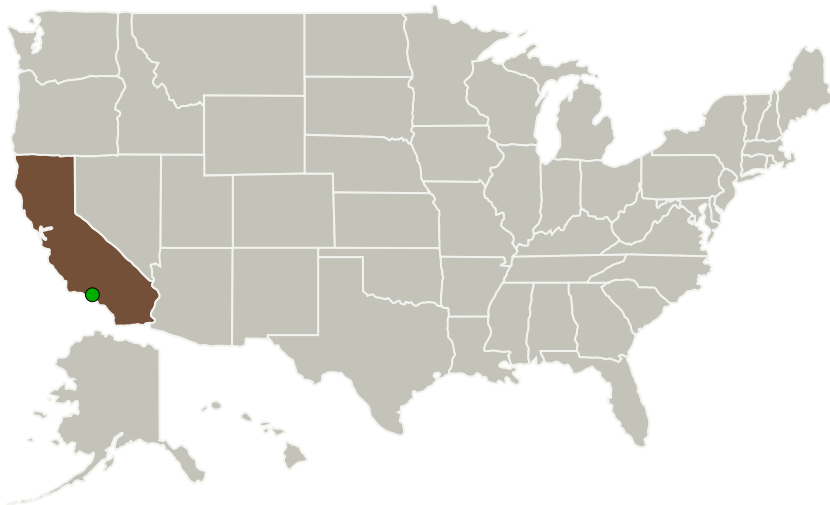
Completed Technology Project (2011 - 2011)



Project Introduction

NASA's Science Mission Directorate is currently considering various sample cache and return missions to the Moon, Mars and asteroids. These missions involve the use of a coring tool to produce rock and soil cores. The MEPAG committee recommends that core acquisition take place directly into an individual encapsulation sleeve with a pressed-in cap. The improved sample encapsulation technology of this proposal can be activated while the drill bit is still in the drill hole, thus preserving sample integrity before the core is even extracted. It also insures the sample does not fall out during bit extraction. The sleeves can handle cores of rock, soil or regolith; and are translucent or transparent enabling inspection of the core after extraction. They preserve stratigraphy, volatiles, voids and gaps, and incomplete cores. A unique aspect of the sleeves instills the ability to preserve core integrity even in the vibration and shock environment of a sample return mission. This proposed Phase 1 effort involves a design trade study, analysis and a proof-of-concept test. At the end of Phase 1, the innovations will be at TRL 4. A proposed Phase 2 effort would involve integration into a core drill design, environmental testing, and shock and vibration testing to advance the technology to TRL 6.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Cadtrak Engineering, LLC	Lead Organization	Industry	San Anselmo, California
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations

California

Project Transitions

**February 2011:** Project Start**August 2011:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/138478>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Cadtrak Engineering, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

David Levitt

Co-Investigator:

David Levitt

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Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.3 In-Situ Instruments and Sensors
 - └ TX08.3.3 Sample Handling

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System